

**ENVIRONMENTAL ASSESSMENT
FOR THE
TRANSITIONAL RESIDENT HOUSE SOLAR
PHOTOVOLTAIC (PV) INSTALLATION**

FINAL



15 SEPTEMBER 2010

PREPARED UNDER BPA VA776-BP-0029, ORDER VA101-C05295

FOR: DEPARTMENT OF VETERANS AFFAIRS

National Energy Business Center Seven Hills, Ohio

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EXECUTIVE SUMMARY

This Environmental Assessment (EA) is a concise public document containing a full analysis of the potential environmental effects of the proposed action and alternatives described below. The purpose of the EA is to comply with the National Environmental Policy Act (NEPA) by providing sufficient data to determine whether to prepare an Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI). The Proposed Action would occur at the Veterans Affairs Transitional House, 9401 Lorain Avenue, Cleveland, Cuyahoga County, Ohio on property owned by the United States Department of Veterans Affairs (VA).

BACKGROUND

The Veterans Affairs Transitional House (TR House) located at 9401 Lorain Avenue, Cleveland, Ohio is a transitional residency program for homeless and recovering Veterans in the Cleveland Metropolitan area. The property was taken over by the VA in 1996 and was formally dedicated on August 8, 1997. The TR House accepted its first resident in December 1997.

PURPOSE AND NEED

Executive Order 13423 *Strengthening Federal Environmental, Energy, and Transportation Management*, Energy Policy Act of 2005 (EPA 2005) and the Energy Independence and Security Act of 2007 (EISA) establishes goals and targets for federal government agencies to increase energy efficiency, reduce greenhouse gas emissions and utilize renewable energy. The Department of Veterans Affairs (VA) as a federal agency is incorporating sustainable practices to meet the requirements of EO13423, EPA 2005 and EISA by utilizing renewable energy technologies at their medical centers and other facilities.

PROPOSED ACTION

The Proposed Action is to construct an on-site Solar Photovoltaic (PV) Renewable Energy (RE) generation system at the TR House. Two alternatives, including the No Action Alternative, are considered in this assessment. Alternative Location 1- the TR House roof was determined to be the Preferred Alternative that best meets the purpose and need of the Proposed Action with a minimum level of environmental consequences.

SUMMARY OF ENVIRONMENTAL IMPACTS

The National Environmental Policy Act (NEPA) requires by law that the VA evaluate any effect its actions might have on the environment. Impacts to a full range of environmental issues were assessed for the No Action Alternative and the Preferred Alternative. A summary of this assessment is provided in Table below.

Table ES-0-1. Summary of Environmental Impacts for Each Alternative

Resource Area	No Action	Alt. 1 (Preferred)
Aesthetics/Visual Resources	N	N
Air Quality	N	B

ENVIRONMENTAL ASSESSMENT

Economic Activity	N	B
Cultural/Historic Resources	N	N
Noise	N	MI (T)
Solid/Hazardous Waste	N	MI (T)
Transportation/Parking	N	MI (T)
Utilities	N	B
Regulatory Compliance	N	N

Key: S = Severe, M = Moderate, MI = Minimal, N = None, B= Beneficial, (T) = Temporary

There would be no significant changes in environmental conditions compared to the existing conditions that would occur as a result of the construction of an on-site Solar Photovoltaic (PV) Renewable Energy (RE) generation system at the TR House. Cumulative impacts were analyzed for each of the specific resources addressed in detail. In conjunction with identified cumulative projects, no significant impacts to the human environment were identified. In addition, it was determined that resource commitments associated with the Proposed Action were not significant and that implementation of the Proposed Action would not permanently narrow the range of beneficial uses on the site.

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LIST OF ACRONYMS AND ABBREVIATIONS

ac	acre	kWh	kilowatt hour
BMP	Best Management Practices	LCC	Life Cycle Cost
CAA	Clean Air Act	m	meter
CEQ	Council on Environmental Quality	mi	mile
CFR	Code of Federal Regulations	mm	millimeter
CH ₄	methane	MPPT	Maximum Power Point Tracking
CO	carbon monoxide	N ₂ O	nitrous oxide
CO ₂	carbon dioxide	NAAQS	National Ambient Air Quality Standards
dB	decibel	NEPA	National Environmental Policy Act
dBA	A-weighted sound level measurement	NHPA	National Historic Preservation Act
EA	Environmental Assessment	NO ₂	nitrogen dioxide
EIS	Environmental Impact Statement	NREL	National Renewable Energy Laboratory
EISA	Energy Independence and Security Act	O ₃	Ozone
EO	Executive Order	Pb	lead
EPA	Environmental Protection Agency	PM ₁₀	10 microns in diameter
ESA	Endangered Species Act	PM _{2.5}	2.5 microns in diameter
FICUN	Federal Interagency Committee on Urban Noise	PV	Solar Photovoltaic
FONSI	Finding of No Significant Impact	RE	Renewable Energy
ft	foot	RTA	Regional Transit Authority
FR	Federal Register	SO ₂	sulfur dioxide
FY	Fiscal Year	TR	Transitional Residence
GHG	Greenhouse Gas	USEPA	U.S. Environmental Protection Agency
HAPs	Hazardous Air Pollutants	U.S.	United States
Hz	Hertz	U.S.C.	U.S. Code
kW	kilowatt	VA	Department of Veterans Affairs

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1 PURPOSE AND NEED FOR PROPOSED ACTION

1.1 INTRODUCTION

This Environmental Assessment (EA) has been prepared by the Department of Veterans Affairs (VA) in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C] § 4321 et seq.); the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (Title 40 Code of Federal Regulations [C.F.R.] §§ 1500-1508); VA Regulations, Environmental Effects of VA Actions, Title 38 CFR, Part 26 (51 FR 37182, October 20, 1986 and VA instructions and guidance. The NEPA process is intended to help public officials make decisions based on the understanding of environmental consequences, and to take actions that protect, restore, and enhance the environment. This EA analyzes the environmental consequences from the proposal to construct an on-site Solar Photovoltaic (PV) Renewable Energy (RE) generation system at the Veterans Affairs Transition House (TR House).

The United States has the most comprehensive system of assistance for veterans of any nation in the world. This benefit system traces its roots to 1636, when the Pilgrims of Plymouth Colony were at war with the Pequot Indians. However, it wasn't until 1917 when the United States entered into World War I, that Congress established a new system of Veterans benefits. Included were programs for disability compensation, insurance for servicepersons and veterans, and vocational rehabilitation for the disabled. By the 1920s, the various benefits were administered by three different Federal Agencies: the Veterans Bureau, the Bureau of Pensions of the Interior Department and the National Home for the Disabled Volunteer Soldiers. The establishment of the Veterans Administration came in 1930 when Congress authorized the President to "consolidate and coordinate government activities affecting war veterans." The three component agencies became bureaus within the Veterans Administration.

The VA health care systems has grown from 54 hospitals in 1930, to include 171 medical centers; more than 350 outpatient, community and outreach clinics; 126 nursing home care units; and 35 domiciliaries. The VA health care facilities provide a broad spectrum of medical, surgical and rehabilitative care. An estimated one-third of the adult homeless population has served in the armed forces. The Veterans Program Enhancement Act of 1998 (Public Law 105-368) authorized the VA to establish a new loan guarantee program for the construction or rehabilitation of multifamily transitional housing projects specifically designed to provide housing for homeless Veterans. The program is intended to increase the amount of housing available as well as provide other services to encourage addiction recovery and re-establish work and social relationships.

The VA TR House plays a critical role in providing housing and services for homeless and recovering chemically dependent Veterans in the Cleveland Metropolitan area. The Transitional Residence (TR) Program is designed to afford homeless and recovering Veterans the opportunity to enhance their recovery and life skills so that a more effective transition can be made back into the community. While at the TR Program, residents are required to participate in a full-time therapeutic work program, addiction recovery treatment, random urine screenings, and maintenance of their own residence. The goals of the program are to enable Veterans to be able to secure housing, maintain sobriety and to secure gainful employment.

1.2 LOCATION AND DESCRIPTION OF THE VETERANS AFFAIRS TRANSITIONAL RESIDENT HOUSE

The VA TR House is situated on the southwest corner of Lorain Avenue and West 94th Street in the city of Cleveland, Cuyahoga County, Ohio. It is located approximately 3.5 miles southwest of downtown Cleveland and approximately 1.5 miles south of Lake Erie. The building was constructed in 1908 and has previously housed a grocery store, a fruit market bakery, a Chinese restaurant, a confectionary, a delicatessen, a dressmaker, a pizzeria and clothes cleaner. The VA purchased the TR House property in

1996. It was opened to residents in December 1997. The site was formally dedicated in August 8, 1997 at the opening ceremonies with Veterans Affairs Officials, and City of Cleveland Officials, Veterans, local residents and local community activists in attendance.

The TR House facility consists of one main building containing ten apartments that include studios as well as one, two, three and four bedroom apartments. In addition to the apartments, the site houses a community room for group meeting and activities, two offices for employees and laundry facilities located in the basement. The TR House maintains a twenty-five bed rehabilitation program; two beds are reserved for female Veterans. There is small on-site parking lot at the rear of the building reserved for TR House employees and government vehicles. On the southwest corner of the parking area there is maintenance shed that contains a lawnmower, a small amount of gas for the lawnmower, windshield wiper fluid, a ladder and various tools required for maintenance of the property. There is also a picnic area containing three tables and a barbecue grill for social gatherings at the rear of the property to the adjacent west of the employee parking lot. There are no other structures on the property.



Figure 1-1. The Veterans Affairs Transitional House



Figure 1-2. VA Transitional House Picnic Area

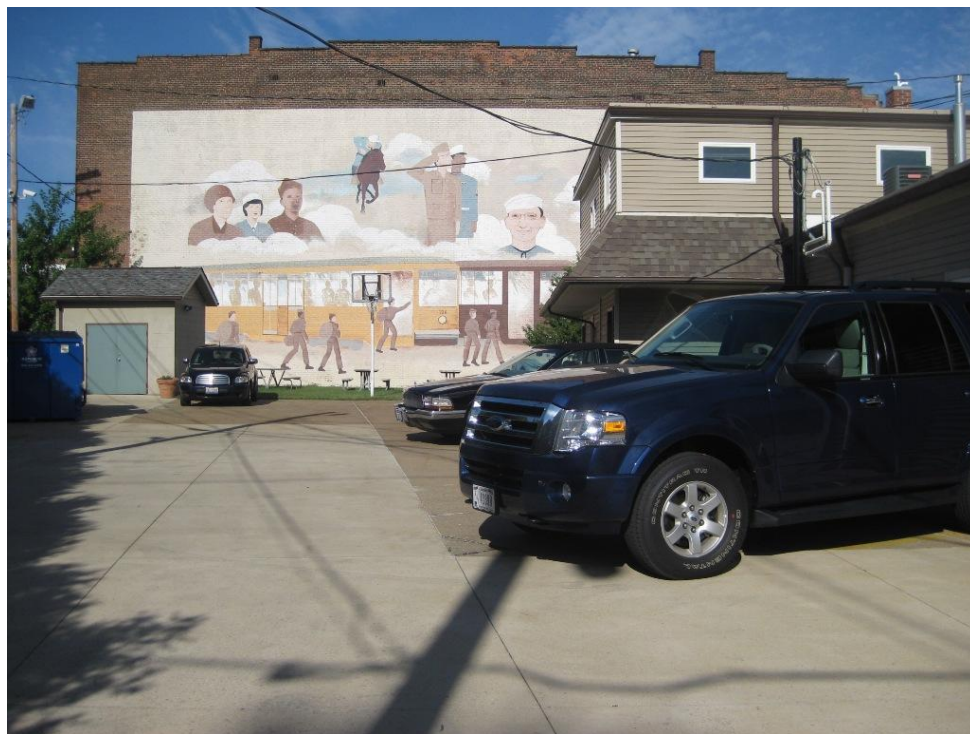


Figure 1-3. VA Transitional House Parking Area



Figure 1-4. VA Transitional House Maintenance Shed

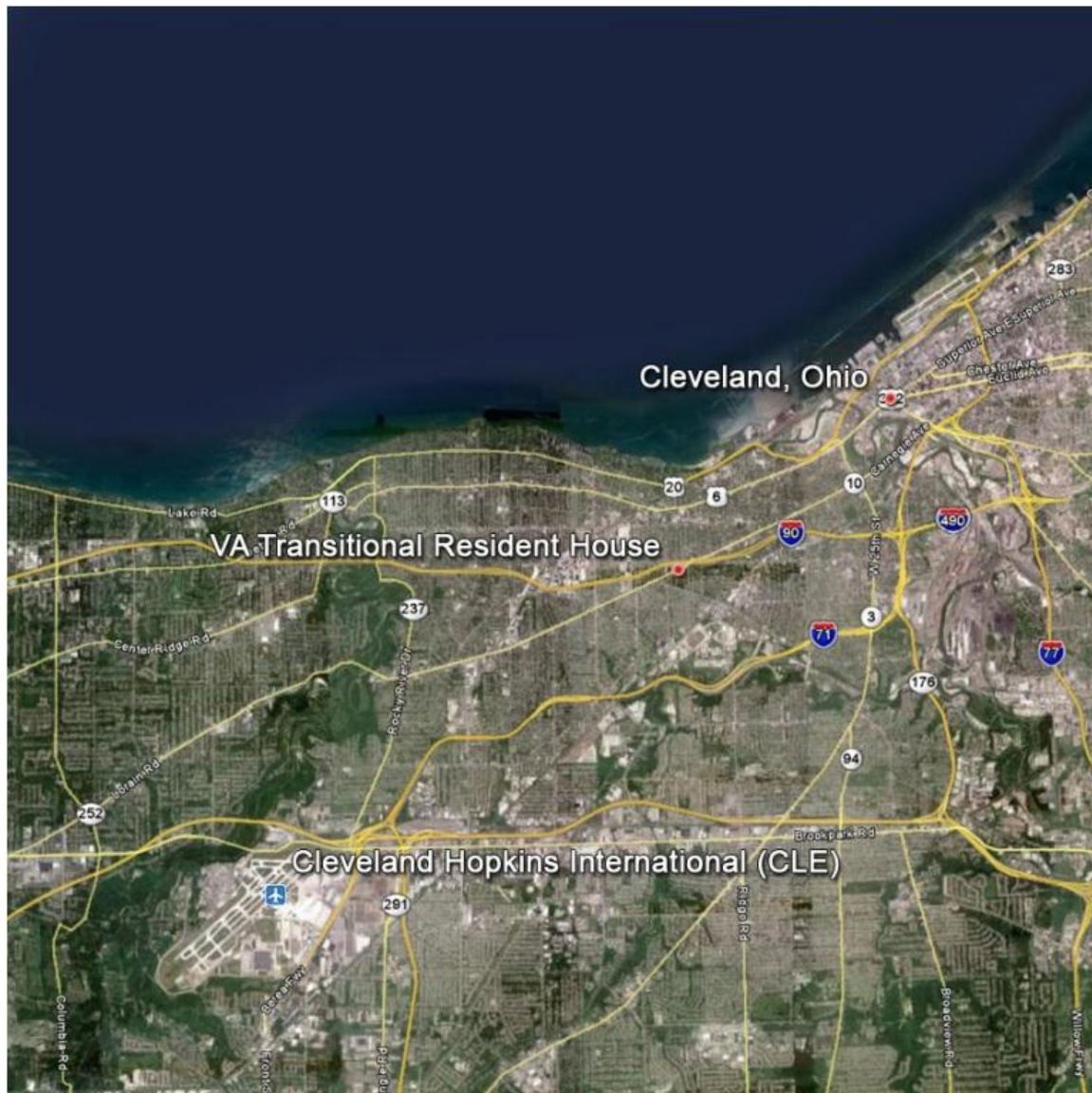


Figure 1-5. Regional Location Map



Figure 1-6. Aerial View of Project Site

1.3 PURPOSE AND NEED

The January 24, 2007 Executive Order 13423 “Strengthening Federal Environmental, Energy, and Transportation Management” was issued requiring Federal agencies to “.....conduct their environmental, transportation, and energy related activities under the law in support of their respective missions in an environmentally, economically and fiscally sound, integrated, continuously improving, efficient and sustainable manner.” EO 13423 sets eight specific goals for the head of each Federal Agency. The installation of Photovoltaic arrays contributes to meeting the requirements of three of the eight goals (goals a, b, and f) stipulated by the Executive Order:

- *Goal (a) improve energy efficiency and reduce greenhouse gas emissions of the agency, through reduction of energy intensity by (i) 3 percent annually through the end of fiscal year 2015, or (ii) 30 percent by the end of fiscal year 2015, relative to the baseline of the agency’s energy use in fiscal year 2003;*
- *Goal (b) ensure that (i) at least half of the statutorily required renewable energy consumed by the agency in a fiscal year comes from new renewable sources, and (ii) to the extent feasible, the agency implements renewable energy generation projects on agency property for agency use;*
- *Goal (f) ensure that (i) new construction and major renovation of agency buildings comply with the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings set forth in the Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (2006), and (ii) 15 percent of the existing Federal capital asset building inventory of the agency as of the end of fiscal year 2015 incorporates the sustainable practices in the Guiding Principles.*

Utilizing PV arrays to self-generate electricity leads to a direct reduction of operational greenhouse gas emissions (GHG). PV electricity is considered a zero contributor to greenhouse gas emissions, if PV electricity is utilized to self generate electricity and the power generated is used on-site to offset in part the facilities current dependence on grid sourced power GHG emissions directly due to the agencies operations are resultantly further decreased. Significant kW rated PV installations can contribute substantially to meet this goal.

1.4 PROPOSED ACTION

The Proposed Action would occur at the VA Transitional House, 9401 Lorain Avenue, Cleveland, OH 44102 on property owned and managed by the United States Department of Veterans Affairs. The proposed action is to construct an on-site Solar Photovoltaic (PV) Renewable Energy (RE) generation system at the TR House. Two alternatives, including the No Action Alternative, are considered in the assessment with Alternative Location 1 – the roof of the TR House determined to be the Preferred Alternative that best meets the purpose and need of the Proposed Action with the minimum level of environmental consequences.

2 DESCRIPTION OF PROJECT ALTERNATIVES

2.1 ALTERNATIVE SELECTION CRITERIA

Installation options available for solar PV generation systems include open areas, parking areas, non-shaded south facing facades, and building roofs. In the determination of alternative locations and the preferred alternative for the installation the following factors were considered by the VA:

- Aesthetics/Visual Resources
- Minimization or elimination of impacts to natural and cultural resources
- Potential for damage by residents, staff, visitors or vehicles
- Ease of installation and maintenance
- Potential of obstruction-related shading for the arrays
- Costs
- Generating capacity and potential energy savings
- Structural integrity and roof load of building
- Solar Insolation values and southern exposure.

Disadvantages of ground-level systems include possible damage by residents or cars, limitations to future construction considerations at the facility, and greater chance of obstruction-related shading problems for the arrays. They are however, easier to access for installation and maintenance. Systems installed on covered parking or walkways have higher initial installed costs compared with typical ballast-mounted PV systems, due to the necessary construction of a larger frame system or other structure, but the dual benefit of collection and shading can help justify the cost. Ballast-mounted systems have disadvantages such as an increased roof load and inhibition of future vertical building expansion, but they are relatively easy to install. However, structurally attached flat-roof installations have additional disadvantages such as possible roof leaks and the possibility of compromising the roof warranty.

A comprehensive Solar Site Analysis was conducted to determine the suitable locations for the installation of the Solar PV system and to evaluate the viability of such a system at each location (*Cost Proposal for Installation of a Grid Tied Solar Renewable Power System at the VA Transitional Housing*). The solar incident radiation strength, structural and physical attributes and access to the electric and thermal energy tie points were assessed for the rooftops of various buildings, parking lots and available open land within the campus. The following parameters were considered in evaluating the feasibility of potential locations.

- **Solar Insolation:** Solar Insolation is the measurement of solar radiation that is incident at a specific area during a specific interval of time and is commonly expressed as kWh/m²-day. Solar Insolation is a key measure of how successful a PV project would be in a given geographical region. The higher the Solar Insolation values the higher the energy generation of each photovoltaic panel of the Solar PV system.
- **Shading Assessment:** Shading from physical structures like trees, buildings, chimneys, exhaust vents, towers, elevated water storage tanks, parking lot poles and panel shading (from one array to another) in multiple arrays have a huge impact on the generation capacity of the Solar PV system. The Solar Insolation combined with the shading factor determines the maximum energy that can be generated from an installed solar energy system at a specific location.
- **Space Availability:** The generating capacity of a Solar PV system is often constrained due to limited availability of open space that is required to install a large Solar PV system. Availability of open space (Open Land, Ground and Building Roof) at the TR House was assessed during the site visit.

- Southern Exposure: In the northern hemisphere, solar panels facing true south will have access to higher solar incident radiation compared to any other direction. True south panel and true azimuth orientation at each potential location was measured and calculated to maximize power generation at that location.

2.2 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

A site visit and discussion with TR House personnel addressed the alternative selection criteria design requirements listed in Section 2.1 and eliminated all but one potential site for installation of the Solar PV system.

Use of the picnic area at the TR House was eliminated from further consideration for the installation of the solar PV generation system due to:

- Aesthetics
- Shading from the adjacent building
- Concerns regarding the loss of recreation area for the TR House residents
- Concerns that the system is too assessable to potential vandalism

Use of the parking area at the TR House for installation of the solar PV generation system was eliminated from further consideration due to:

- Aesthetics
- Concerns regarding loss of parking
- Concerns that the system is too assessable to potential vandalism
- Concerns regarding shading from the TR House

2.3 ALTERNATIVES BROUGHT FORWARD FOR FURTHER CONSIDERATION

The viable locations further considered in this analysis are:

- Alternative Location 1 – TR House Roof
- No Action Alternative

2.3.1 Alternative Location 1 (Preferred Alternative): TR House Roof

The location selected as the Alternative 1 for the installation of the Solar PV generation system is along the north portion of the roof along Lorain Avenue and southeast portion of the roof near the 94th Street side of the roof. The solar arrays would be placed on the roof following the angles of the roof and would be unnoticeable from the sidewalk or the street. A total of forty-eight solar panel modules would be placed on the roof. Placement of the solar panel modules will include:

- Two rows of 7 modules that would require approximately 24 roof penetrations to mount the rails of the modules to the roof.
- One row of 14 modules that would require approximately 24 roof penetrations to mount the rails of the modules to the roof.
- One row of 6 ballast-mounted modules.
- One row of 5 ballast-mounted modules.
- One row of 9 ballast-mounted modules.

In addition, an inverter will be placed in the storage room located on the southeast side of the building to convert DC into AC current and feed the AC current to the grid (Figure 2-6). The site has good southern exposure and minimal shading from trees, overhead power lines or buildings.



Figure 2-1. Exterior of Main Building



Figure 2-2. Proposed Solar PV Installation Location 1 on Roof (Looking north)



Figure 2-3. Proposed Solar PV Installation Location 2 on Roof (looking north)



Figure 2-4. Proposed Solar PV Installation Location 3 on Roof (looking east)



Figure 2-5. Proposed Solar Installation Location 4 on Roof (looking east)

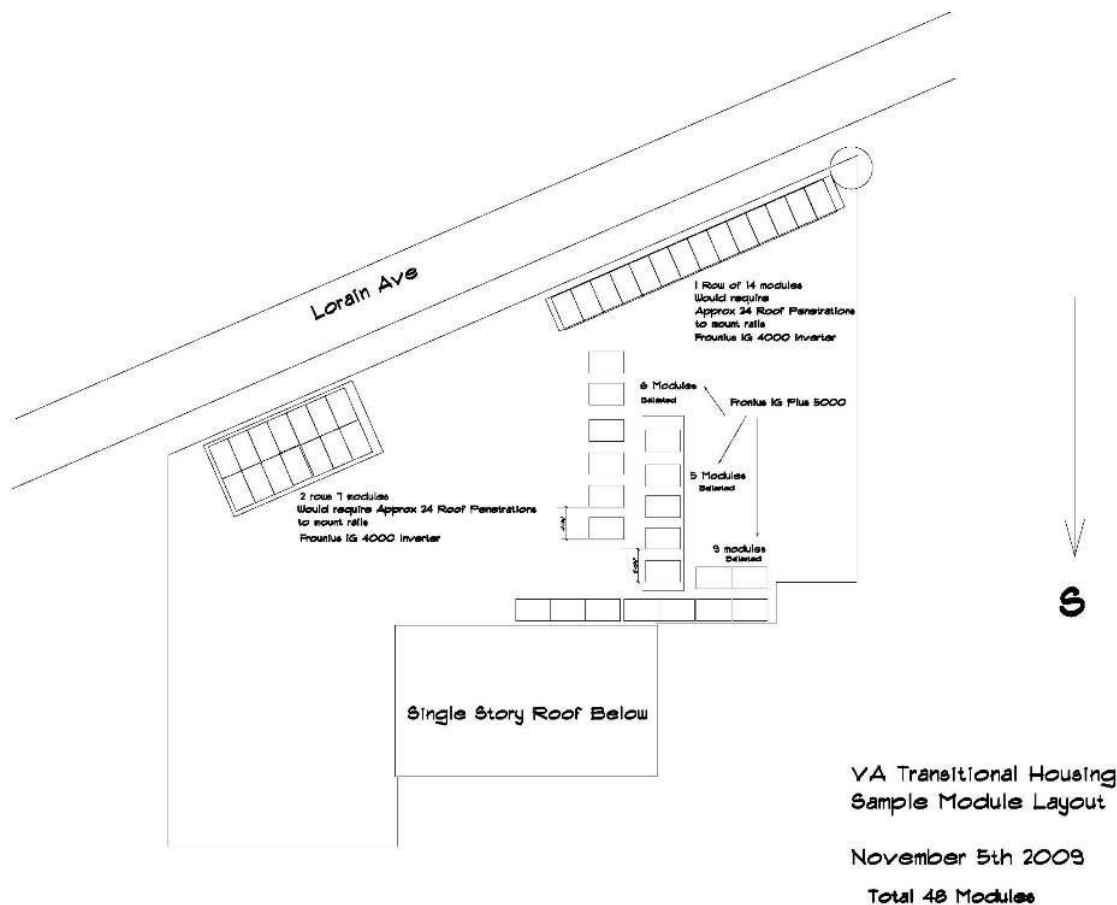


Figure 2-6. Proposed Solar PV Installation Layout on the VA TR House Roof.

2.3.2 No Action Alternative

Under the No Action Alternative construction of an on-site Solar Photovoltaic (PV) Renewable Energy (RE) generation system at the TR House would not occur. Under the No-Action alternative, no impacts to the environment will occur on the property but consumption of non-renewable energy from grid-sourced power would continue unchanged. If in place, the on-site Solar Photovoltaic (PV) Renewable Energy (RE) generation system would reduce CO₂ emissions by an estimated 250 tons over 25 years. Because of this the beneficial impacts to the environment from the Proposed Action of a reduction in Greenhouse Gas (GHG) emissions would not occur.

2.3.3 Basis for Selection of Preferred Alternative

Alternative Location 1: The TR House roof is the preferred alternative over the No Action Alternative because it meets the purpose and need of the proposed action and:

- The size of the available area for the installation is adequate and will support a roof mounted solar PV generation system with an estimated generating capacity of approximately (12,675 kWh/yr.)
- The location is screened from public view therefore; reducing impacts to Aesthetic, Visual and Cultural Resources.
- The location is not accessible to the public therefore; eliminating the potential for vandalism.

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- The site has good southern sun exposure and will have minimum shading from trees, other buildings and power lines. The average solar access for this location is 4.1 sun hours. The power requirement for the facility is expected to be satisfied through a combination of power generation from the solar PV system and supplemental power purchased through the power grid.
- The system will meet the internal the Veterans Affairs' goals of increased efficiency and cost effectiveness. Based on the average utility savings per year the system will save more than \$75,000 in electric expenses over 25 years.

Table 2-1. Costs and Savings over Twenty-five years

Year	Avg Rate ¢/kWh	Utility Savings Dollars/year	Net Utility Savings, sREC's, PBI,s etc.	Rebate Incentives	Cost/Payback Schedule (Cumulative Cash Position)
0				\$39,480	(\$49,450)
1	11.6	\$1470	\$4417		(\$45,033)
2	12.1	\$1581	\$4504		(\$40,529)
3	12.5	\$1699	\$4600		(\$35,929)
4	13.0	\$1827	\$4704		(\$31,225)
5	13.6	\$1890	\$4745		(\$26,480)
6	14.1	\$1957	\$2687		(\$23,793)
7	14.0	\$2025	\$2742		(\$21,051)
8	15.3	\$2096	\$2800		(\$18,251)
9	15.9	\$2169	\$2860		(\$15,392)
10	16.5	\$2245	\$2922		(\$12,470)
11	17.2	\$2324	\$2263		(\$10,206)
12	17.9	\$2405	\$2334		(\$7,872)
13	18.6	\$2489	\$2407		(\$5,465)
14	19.3	\$2577	\$2483		(\$2,981)
15	20.1	\$2667	\$2562		(\$419)
16	20.9	\$2760	\$2644		\$2224.00

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17	21.7	\$2857	\$2728		\$4953.00
18	22.6	\$2957	\$2816		\$7,768.00
19	23.5	\$3060	\$2907		\$10,675.00
20	24.4	\$3167	\$-3792		\$6883.00
21	25.4	\$3278	\$3098		\$9981.00
22	25.4	\$3393	\$3199		\$13,179.00
23	27.5	\$3512	\$3303		\$16,483.00
24	28.6	\$3634	\$3412		\$19,894.00
25	29.7	\$3762	\$3524		\$23,419.00

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACT ANALYSIS

This EA was prepared in accordance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500-1508), and VA Regulations, Title 38 of the CFR, Section 26.4 (a). The VA policy includes provisions to act with care in carrying out its mission of providing services for veterans and to ensure it does so consistently with national environmental policies. Specifically, the VA shall ensure that all practical means and measures are used to:

- Protect, restore, and enhance the quality of the human environment;
- Avoid or minimize adverse environmental consequences, consistent with other national policy considerations;
- Prepare concise and clear environmental documents which shall be supported by documented environmental analyses; and
- Preserve historical, cultural, and natural aspects of our national heritage.

3.1 PRIOR ENVIRONMENTAL STUDIES

The following report, prepared for the VA, was reviewed during the preparation of this assessment:

1. *Grid Tied Solar Renewable Power System for VA Transitional Housing*. Prepared for the Department of Veterans Affairs by Utility Control Systems Management, Inc., Cleveland, Ohio. 05 August 2010.

3.2 DEFINITIONS OF IMPACTS

1. Beneficial: No adverse effect anticipated. Effect would provide a favorable, advantageous and/or improved condition.
2. Severe: Complete destruction, disruption, violation of standards, incompatibility, disturbance, or surpassing capability of the attribute under consideration.
3. Moderate: Considerable destruction, disruption, violation of standards incompatibility, disturbance or surpassing of capability of the attribute. However, the effect can be minimized through further study and mitigation.
4. Minimal: Temporary or minor destruction, disruption, violation of standards, incompatibility, disturbance, or surpassing of capability of the attribute. This effect can be mitigated through standard design, construction or operational procedures.
5. None: No effect anticipated.

3.3 SPECIFIC AREAS EVALUATED

This section describes relevant existing environmental conditions for resources potentially affected by the Alternatives brought forward for further consideration, including the No Action Alternative, as described in Chapter 2. In compliance with NEPA, CEQ regulations, and VA regulations, 38 CFR, Part 26.6(c) Environmental Effect of VA Actions, the description of the affected environment focuses only on those resources potentially subject to impacts. The evaluation was conducted in accordance with the guidelines of the VA's Environmental Compliance Manual (VA, 1998) and examines the impacts of the Proposed Action to construct an on-site Solar Photovoltaic (PV) Renewable Energy (RE)

generation system at the VA Transition House. A number of resource areas were not evaluated in detail in this EA because the location of the project, the nature of the Proposed Action and the previously developed nature of the preferred alternative location (a roof) under consideration for installation of the Solar PV generation system make it unlikely that any impacts to them would occur. These resource areas are:

- Aviation/Radar – No military or civilian airports or radar facilities are adjacent to, or in close proximity, to the TR House. Therefore aviation/radar assets would not be affected by the Proposed Action.
- Community Services/Public Health and Safety – Public Health and Safety would not be compromised and services provided by surrounding communities such as police, fire and ambulance services would not be affected by the Proposed Action.
- Environmental Justice - Minority and low-income populations would not be directly affected or disproportionately burdened by the Proposed Action.
- Floodplains/Wetlands - The preferred location (Alternative 1) for installation of the Solar PV generation system is in a previously built area specifically, a rooftop. According to the Federal Emergency Management Agency's Flood Insurance Rate Map (panel number 3901040025B) and the Cleveland area U.S. Geological Survey Topographic Map, no wetlands or floodplains exist on the property or within one mile of the property. Therefore, floodplains or wetlands would not be affected by the Proposed Action.
- Geology/Soils - The preferred location (Alternative 1) for installation of the Solar PV generation system is in a previously built area specifically, a rooftop. Therefore geology or soils would not be affected by the Proposed Action.
- Land use - The preferred location (Alternative 1) for installation of the Solar PV generation system represents the current and planned use of the property set by the local governing jurisdictional authorities. The current land use plan for the property would not be affected by the Proposed Action.
- Hydrology/Water Quality - The preferred location (Alternative 1) for installation of the Solar PV generation system is in a previously built area, a building rooftop. Therefore hydrology and water quality would not be affected by the Proposed Action.
- Resident Population – No changes or additions TR House staff, changes in the neighborhood makeup, or alteration of demographic characteristics would occur as a result of the Proposed Action.
- Vegetation and Wildlife - The preferred location (Alternative 1) for installation of the Solar PV generation system is in a previously built area specifically, a building rooftop. Therefore vegetation and wildlife would not be affected by the Proposed Action.
- Potential for Generating Controversy - Installation of an onsite Solar PV generation system at the VA TR House is considered a non-controversial project by the VA and is not expected to generate public interest or concern.

- Real Property - The preferred location (Alternative 1) for installation of the Solar PV generation system represents the current and planned use of the property by the governing jurisdictional authorities. No reduction in land values or loss of property taxes to the city of Cleveland would occur as a result of the Proposed Action.

The following resources will be analyzed in more detail in the following sections:

- Aesthetics/Visual Resources
- Air Quality
- Economic Activity
- Cultural/Historic Resources
- Noise
- Solid/Hazardous Waste
- Transportation/Parking
- Utilities
- Regulatory Compliance

3.3.1 Aesthetics/Visual Resources

Aesthetics refers to the visual resources including natural and man-made features that give a particular piece of property its aesthetic properties. High sensitivity relates to rare or unique natural settings. Medium sensitivity relates to more developed areas with motor vehicles and modern civilization. Low sensitivity areas relate to areas with minimal landscape features and few changes in appearance. The mission of the TR House is to provide housing and life skills to homeless and recovering Veterans in a comfortable and secure location so that Veterans can transition back into the community. Therefore, the TR House is considered to be of medium sensitivity when considering the aesthetics of a project and its impact on visual resources.

Existing Setting – The TR House consists of approximately 0.52 acre of land currently developed as an institutional lands as defined by the City of Cleveland’s City Planning Commission. The neighborhood surrounding the TR House is developed as retail, mixed-use residential and institutional lands. Immediately to the north of the TR House there is a small retail center containing a laundromat, a sandwich shop and a beverage store. The West Side Community House and Friendship Senior Center is to the northeast of the property. Immediately to the east of the TR House is a mixed-use residential property that houses a music studio and residential living quarters. Downtown Cleveland is approximately 3.5 miles east of the TR House.

Potential Environmental Impacts and Proposed Mitigation Measures – The proposed site for the installation of the Solar PV generation system on the roof of the TR House was selected in order to minimize aesthetic/visual resources. Because the solar panels would be hidden from view of pedestrians, neighborhood residents and the public right of way; the installation is not expected to cause visual disturbing clutter or block views of the neighborhood that would interfere with activities or enjoyment of

living at the TR House or living in the neighborhood. For these reasons no impact to aesthetic or visual resources from implementation of Alternative 1 (Preferred Alternative) is expected. Under the No Action Alternative a solar photovoltaic generation system would not be installed. Consequently there would be no impacts on the aesthetics and visual resources of the TR House.

3.3.2 Air Quality

Impacts refer to changes in the air quality related to changed conditions caused by an action. Air quality refers to the concentration of air contaminants in a specific location and is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. Air quality is determined with reference to ambient air concentrations of seven major pollutants determined by the U.S. Environmental Protection Agency (USEPA) to be of concern with respect to the health and welfare of the general public. These pollutants, called “criteria pollutants,” are carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃), suspended particulate matter less than or equal to 10 microns in diameter (PM₁₀), fine particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5}), and lead (Pb). The USEPA has established National Ambient Air Quality Standards (NAAQS) for these pollutants. Areas that violate a Federal air quality standard are designated as non-attainment areas.

In addition to those pollutants that are designated criteria pollutants, additional pollutants that are considered to have the potential for health effects are categorized as hazardous air pollutants (HAPs) under Section 112 of the Clean Air Act (CAA). In addition to criteria pollutants and HAPs, combusive emission sources are also source of carbon dioxide (CO₂) and minor amounts of nitrous oxide (N₂O) and methane (CH₄), which are considered greenhouse gases.

Existing Setting –The City of Cleveland is located in Cuyahoga County and is part of the Great Lakes Basin as designated by U.S. EPA. Based on the U.S. EPA National Ambient Air Quality Standards, in December 2008 Cuyahoga County was designated as non-attainment for Ozone (8hr) and Fine Particulate Matter (PM_{2.5}).

Table 3-1. Cuyahoga County (2008) Attainment Status for the Criteria Pollutants:

Pollutant	National Standards
Carbon Monoxide	Attainment
Nitrogen Dioxide	Attainment
Ozone (1hr)	Attainment
Ozone (8hr)	Nonattainment
Sulfur Dioxide	Attainment
Fine Particulate	Nonattainment

Matter (PM2.5)	
Coarse Particulate Matter (PM10)	Attainment
Lead	Attainment

Source: <http://www.epa.gov/air/data/nonat.html?st~OH~Ohio>

The TR House is located in Cuyahoga County and is under jurisdiction of the Cleveland Department of Health's Division of Air Quality. The Division of Air Quality (DAQ) serves as Ohio EPA's delegated agent of air pollution control for all of Cleveland and Cuyahoga County. The DAQ's primary objective is to ensure that regulated industrial and commercial sources within Cleveland and Cuyahoga County are in compliance with federal, state and local air quality regulations (Cleveland Department of Health Division of Air Quality <http://www.clevelandhealth.org/AirQuality/>). Sources of emissions at the TR House include various mobile sources. Mobile source emissions include personal and government owned vehicles and equipment.

Potential Environmental Impacts and Proposed Mitigation Measures – Utilizing PV arrays to self-generate electricity leads to a direct reduction of operational greenhouse emissions (GHG). PV electricity is considered a zero contributor to greenhouse gas emissions, if PV solar power is utilized to self-generate electricity and the power generated is used on site to offset in part the facilities current dependence on grid sourced power GHG emissions directly due to the agencies operations are resultantly further decreased.

The Department of Energy reports through a document titled "Updated State level Greenhouse Gas Emission Coefficients for Electricity Generation 1998-2000" published April 2002 that on average grid generated electricity in the United States resulted in contributing the following emission factors for the major GHG's:

2000 Data Year (1997-1999)			2001 Data Year (1998-2000)		
CO ₂ tons/MWH 0.686	CH ₄ lbs/MWH 0.0091	N ₂ O lbs/MWH 0.0197	CO ₂ tons/MWH lbs 0.668	CH ₄ lbs/MWH 0.0111	N ₂ O lbs/MWH 0.0192

Construction activities for the installation of the proposed Solar PV array can be expected to result in the generation of some level of fugitive dust, and exhaust emissions from construction equipment and the transportation of construction crews to the site. The Environmental Protection Agency (EPA) has determined specific Federal actions, or portions thereof, to be exempt from the General Conformity Rule. Actions are exempt where the total of all reasonably foreseeable direct and indirect emissions (1) does not equal or exceed prescribed threshold levels for a formal conformity determination, called "*de minimis*" levels and (2) would be less than 10 percent of the area's annual emission budget. Emissions considered are limited to those that would be practicably controlled by VA.

Detailed design and construction plans have not yet been made and are therefore unavailable for analysis which precludes development of an estimate of expected emissions from construction activities. However, preliminary site layout drawings (Figure 2.6) show that the rooftop installation will be of such small scale and scope such that the reasonably foreseeable direct and indirect emissions from this project will not exceed threshold levels for a formal conformity determination.

Once installed operation of the Solar PV generating system would have the long term beneficial effect of reducing the demand for grid supplied electric power at the TR House and thereby reducing the emission

of air pollutants and GHG emissions from gas, coal, or oil fired generating facilities which supply power to the electrical grid. For these reasons a beneficial impact to air quality from implementation of Alternative 1(Preferred Alternative) is expected.

Under the No Action Alternative a solar photovoltaic generation system would not be installed and there would be no change in the use of electrical power supplied from the electric grid. Consequently no beneficial impacts to air quality and no reduction in GHG emissions would occur from the operation of the Solar generating system.

3.3.3 Cultural/Historic Resources

Cultural resources of value include districts, buildings, sites, structures, areas of traditional use, and objects (artifacts) of historical, architectural, archaeological, cultural, or scientific importance. Cultural resources can be classified as: archaeological (prehistoric and historic) resources, architectural resources, or traditional cultural resources. The preservation of cultural resources is governed by multiple regulatory requirements (see Section 3.3.9) which address the protection of archeological, historic, and cultural resources.

Existing Setting – The VA TR House is situated on 0.52 acre of land on the southwest corner of Lorain Avenue and West 94th Street in the city of Cleveland, Cuyahoga County, Ohio approximately 3.5 miles west of downtown Cleveland and approximately 1.5 miles south of Lake Erie. It was constructed in 1908 and has previously housed a grocery store, a fruit market bakery, a Chinese restaurant, a confectionary, a delicatessen, a dressmaker, a pizzeria and clothes cleaner. The building is a two-part commercial block with a cylindrical turret with tent roof accentuating the building's northeast corner. The building sustained fire damage in 1982 (Ohio Historic Inventory). There is small on-site parking lot at the rear of the building reserved for TR House employees and government vehicles. On the southwest corner of the parking area there is a maintenance shed that contains a lawnmower, a small amount of gas for the lawnmower, windshield washer fluid, a ladder and various tools required for maintenance of the property. In addition, there is a picnic area containing three picnic tables and a barbeque grill for social gatherings at the rear of the property to the adjacent west of the employee parking lot. There are no other structures on the property. There are no known archeological resources on the site. The TR House is located in the Lorain Station Historic District which includes the buildings with the following the addresses 9005-10134 Lorain Avenue. The Lorain Station Historic District was listed on May 05, 1994 with the following National Register Reference Number 94000417. The applicable criteria for this District are Criterion A and Criterion C. Criterion A properties are associated with events that have made significant contribution to broad patterns of our history. Criterion C properties embody the distinctive characteristics of a type, period, or method of construction or represent the works of a mater, or possess high values, or represent a significant and distinguishable entity (<http://ohsweb.ohiohistory.org/ohpo/nr/details.aspx?refnum=94000417>). The TR House is considered a contributing building in this historic district therefore; the building cannot be demolished or significantly altered.

Potential Environmental Impacts and Proposed Mitigation Measures – The location selected for Alternative 1(Preferred Alternative) is on the south facing slopes of the roof of the TR House which is no longer original to the structure. The roof was a flat tar roof that was replaced with white PVC in September 2003. The selection of this location is intended to mask the installed solar panels from the public right of way. Therefore no impact to the integrity of location, design, or setting of the building is expected.

Specific requirements with respect to historical or cultural constraints were researched in publically available documents for the Facility.

Because the TR House is in a district on the National Register compliance with Section 106 of the National Historic Preservation Act is required with respect to maintaining the historic character of the district. The VA is cognizant of the historic importance of the site and seeks to preserve the integrity of the site. Design criteria for Alternative 1 would ensure no adverse effects to the integrity of the property. Therefore no adverse effect to archeological or historic resources is anticipated from the Proposed Action. Concurrence on this determination of no adverse effect was reached during the August 30, 2010 meeting with TR House Officials, Cudell Associates and the Cleveland Landmark Commission. For these reasons no impact to cultural or historic resources from implementation of Alternative 1 (Preferred Alternative) is expected.

Under the No Action Alternative a solar photovoltaic generation system would not be installed. Consequently, there would be no impacts on the cultural or historic resources of the TR House.

3.3.4 Economic Activity

Economic Activity refers to the effect that the proposed action would have on the economic conditions in the surrounding area.

Existing Setting - The TR House is located in Cuyahoga County in northeastern Ohio on the southern shore of Lake Erie near the mouth of the Cuyahoga River approximately 60 miles west of the state of Pennsylvania. Cleveland is the county seat of Cuyahoga County which is the most populous county in the state. According to the Census Bureau, 444,313 people resided in Cleveland in 2006 which represents a 6.9 percent decline in population from April 1, 2000 and July 2006. The Median household income was \$25, 928 in Cleveland. The median household income in Cuyahoga County was \$44,324 in 2008. (<http://quickfacts.census.gov/qfd/states/39/3916000.html>).

Diversified manufacturing is a primary economic sector, resting on a traditional base of heavy industry in particular. Consistent with a nationwide trend, the services industry—transportation, health, insurance, retailing, utilities, commercial banking, and finance—is emerging as a dominant sector. Cleveland is also home to nearly 150 international companies from 25 different countries.

Manufacturing has traditionally been the primary industry of northeast Ohio. It remains so today, although the local economy has suffered along with the rest of the nation during the recession of the late 1990s and early 2000s. Dubbed "Polymer Valley," the metropolitan Cleveland area has the largest concentration of polymer companies (tire companies) in the United States. The area's other manufacturing companies are engaged in such areas as the automotive industry, fabricated metals, electrical/electronic equipment, and instruments and controls. Supported by the manufacturing industry is the science and engineering field. More than 168 engineering companies are located in the Cleveland metro area. These firms engage in civil engineering, construction, and the burgeoning field of information technology, which employs approximately 73,500 area workers. Among the local institutions of science and engineering are the Cleveland Engineering Society, the Cleveland Society of Professional Engineers, the Great Lakes Science Center, the NASA John H. Glenn Research Center, ASM (American Society for Metals) International, and the engineering schools of Case Western Reserve University, Cleveland State University, and the University of Akron.

Cleveland's research base for the biotechnology and biomedical industry has tripled in recent years, from \$50 million to \$150 million. More than 100 biotechnology firms are located in northeast Ohio, along with more than 100 research laboratories. The Cleveland Clinic Foundation has the nation's largest hospital-based department of biomedical engineering. Area colleges offer training in biomedical or bioscience

technology; among them are Case Western Reserve University, Cleveland State University, Kent State University, Lakeland Community College, and the University of Akron.

Common items and goods produced in Cleveland include: automobile parts, bolts and nuts, machine tools, paints and lacquers, rubber and oil products, chemicals, rayon, foundry and machine shop products, electrical machinery and appliances, men's and women's clothing, iron and steel (<http://www.city-data.com/us-cities/The-Midwest/Cleveland-Economy.html>)

Potential Environmental Impacts and Proposed Mitigation Measures – Installation and maintenance costs for the Solar PV generation system are expected to have a beneficial impact on economic activity. A quote was submitted for installation of a Grid Tied Solar Renewable Power System by Utility Control Systems Management, Inc. The estimate for the installation cost without incentives is projected to be \$88,930 for Alternative 1. However, it is unknown whether the contract for installation of this system would be awarded to Utility Control Systems Management, Inc. or another local company or to a company based in another part of the state or country. Therefore, the economic impact on the local economy and the surrounding area cannot be accurately estimated. However, some level of beneficial impact on the local economy from implementation of Alternative 1 (Preferred Alternative) is expected.

Under the No Action Alternative a solar photovoltaic generation system would not be installed. Consequently no beneficial impacts to economic activity in Cuyahoga County or the surrounding area would occur.

3.3.5 Noise

Noise refers to the generation of noise by construction or normal operations on the property. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying (Federal Interagency Committee on Urban Noise [FICUN] 1992). Human response to noise can vary according to the type and characteristic of the noise source for example, the distance between the noise source and the receptor, the sensitivity of the receptor, and the time of day. The physical characteristics of sound include its level, frequency, and duration. Sound is commonly measured with instruments that record instantaneous sound levels in decibels (dB), which are based on a logarithmic scale (e.g., a 10-dB increase corresponds to a 100 percent increase in perceived sound). The minimum change in sound level that the human ear can hear is about 3 dBA. A change in sound level of 10 dB represents about a 90 percent change in sound intensity. A 10-dBA change typically is perceived by the human ear; as a doubling or halving in loudness. While the range of frequencies across which humans hear extends from 20 to 20,000 Hertz (Hz), the human ear is most sensitive to sounds between 1,000 and 8,000 Hz, with sensitivity diminishing at lower and higher frequencies. Therefore, A-weighted sound level measurements (dBA), which de-emphasize low and high frequencies and emphasize mid-range frequencies, are used to characterize sound levels that are heard especially well by the human ear. Human hearing ranges from approximately 20 dBA (the threshold of hearing) to 120 dBA (the threshold of pain). The main issues concerning noise effects on humans are physiological effects (hearing loss and non-auditory effects), behavioral effects (speech interference, sleep interference, performance effects), and subjective effects, such as annoyance. Noise-sensitive receptors generally are human activities or land uses that may be subject to substantial interference from noise. Land uses associated with sensitive receptors include residential dwellings, mobile homes, hotels, motels, hospitals, nursing homes, education facilities, recreational facilities and areas, and libraries.

Existing Setting – The TR House consists of approximately 0.52 acre of land developed as institutional lands with 2 offices for staff and 10 apartments for residents. The TR House consists of approximately 0.52 acre of land currently developed as institutional lands as defined by the City of Cleveland's City Planning Commission. The neighborhood surrounding the TR House is developed as retail, mixed-use

residential and institutional lands. Immediately to the north of the TR House is a small retail center containing a laundromat, a sandwich shop and a beverage store. The West Side Community House and Friendship Senior Center is to the northeast of the property. Immediately to the east of the TR House is a mixed-use residential property that houses a music studio and residential living quarters. Because the area surrounding the project area consists mainly of urban lands the most commonly occurring noise sources and contributors to ambient noise levels are; local vehicle traffic on Lorain Ave and surrounding streets, pedestrian traffic, occasional emergency vehicles, occasional commercial and private aircraft over flight, routine maintenance activity (lawn mowers, leaf blowers).

Potential Environmental Impacts and Proposed Mitigation Measures – Alternative 1(Preferred Alternative) would not introduce permanent or long term changes in the noise generated at the project site. No permanent stationary or non-stationary noise sources would be introduced. During the construction period temporary non-stationary sources of noise would be introduced and minor impacts would occur because of the construction activities. General construction activity can be expected to generate reoccurrent, but not continuous, noise sound levels on the average of approximately 90-110 dBa (National Institute on Deafness and other Communication Disorders, www.nidcd.nih.gov/health/education/). Detailed design and construction plans have not yet been made and are therefore unavailable for analysis which precludes an accurate estimate of expected noise generation from construction activities. However, preliminary site layout drawings (Figure 2.6) show that the installation would utilize various areas on the roof.

The nearest sensitive human receptors to the Proposed Action site are the apartments in the TR House, the private residential dwelling located on West 94th Street approximately 100 feet south of the proposed action, a residence 60 feet east of the proposed action and the West Side Community House and Friendship Senior Center located at 9300 Lorain Avenue approximately 140 feet north east of the proposed action. While temporary noise impacts to TR House residents and to neighbors could occur from Alternative 1 these impacts could be reduced by the use of Best Management Practices (BMPs) which could include scheduling the periods when noise producing construction activities would occur during business hours or hours when TR House residents and neighbors are least likely to be home. For these reasons minimal temporary impacts from noise generated by construction activity due to implementation of Alternative 1 (Preferred Alternative) are expected.

Under the No Action Alternative a solar photovoltaic generation system would not be installed. There would be no change in noise producing sources for the TR House and therefore no impacts from noise would occur.

3.3.6 Solid/Hazardous Waste

The Solid and Hazardous Waste category refers to being in compliance with solid and hazardous waste regulations at the local, state, and Federal levels.

Existing Setting – Routine TR House maintenance activity produces solid waste consisting primarily of organic material (lawn clippings, tree and shrub trimmings) as well as general recyclable and non-recyclable trash (paper, plastic, cans, metal scrap, and food waste) generated by the staff and residents at the TR House. Waste disposal services are provided on contract with the VA. A minimal amount of hazardous waste (gas, anti-freeze, oil, oily rags, and pesticide and herbicide containers) is generated on site from TR House maintenance activities and vehicle and lawnmower equipment maintenance. Allied Waste is contracted to pick up and dispose of waste and recycle materials on a weekly basis.

Potential Environmental Impacts and Proposed Mitigation Measures – Construction activity for Alternative 1(Preferred Alternative) would be expected to generate a limited quantity of solid waste, but

no hazardous waste, which would require disposal or recycling. Best Management Practices (BMP) for minimization of the waste generated and disposal/recycling would be a requirement of a contract for the installation. No permanent waste stream of solid or hazardous waste will occur as a result of the Proposed Action. Therefore environmental impacts from the generation of solid waste during the construction period are expected to be temporary and limited in scope. For these reasons minimal temporary impacts from the generation of solid waste due to implementation of Alternative 1 (Preferred Alternative) are expected.

Under the No Action Alternative a solar photovoltaic generation system would not be installed. There would be no change in the generation or disposal of Solid/Hazardous waste at the TR House and therefore no impacts from solid/hazardous waste would occur.

3.3.7 Transportation/Parking

Transportation circulation refers to movement of vehicles within regional roadway networks. Parking refers to the existing capacity of vehicle parking.

Existing Setting – The TR House is located at southwest corner of Lorain Avenue and West 94th Street. Interstate 90 (I-90) is directly north of the proposed site with an entrance ramp approximately one quarter mile east of the proposed site. Lorain Avenue (State Route 10) provides a direct link to Downtown Cleveland. The facility is also accessible by public transportation; the Greater Cleveland Regional Transit Authority (RTA) # 22 bus runs east to downtown (East 13th and Payne) and west to the Park Ridge Station. This bus provides local transportation for TR House residents and transportation to the Louis Stokes Cleveland VA Medical Center's Brecksville and Wade Park campuses. Public parking is available on 94th Street. Private parking is available for TR House employees and Government vehicles behind the TR House on the South side of the property.

The Northeast Ohio Area-wide Coordinating Agency collects traffic counts for long and short range transportation planning, transportation-related air quality planning, and area wide water quality management planning. While no traffic data was available for Lorain Avenue and West 94th Street, the closest traffic point west was located at Lorain Avenue and 134th Street while the closest traffic point east was located at Lorain and 50th Street. The 24-hour average daily traffic count between 2006 and 2009 at Lorain Avenue and 134th Street was 15,960 and at Lorain Avenue and 50th Street was 10,830 (<http://www.noaca.org/transportation.html>). Parking at the TR House consists of approximately four unmarked spaces for government vehicles and employee vehicles.

Potential Environmental Impacts and Proposed Mitigation Measures – No long term impacts to transportation or parking will occur as a result of implementation of the Proposed Action. While an undetermined number of additional vehicle trips per day on Lorain Avenue, West 94th Street and connecting streets would occur from contractor trucks and personal vehicles the number is expected to be low and to be inconsequential relative to the normal volume of traffic on these roads. Therefore, during the period of construction minimal temporary impacts to transportation and parking from implementation of Alternative 1 is expected.

Under the No Action Alternative a solar photovoltaic generation system would not be installed. There would be no change in the traffic patterns, the number of vehicle trips or the capacity of parking facilities at the TR House and therefore no impacts to transportation/parking would occur.

3.3.8 Utilities

The Utilities category refers to changes in the use of public utilities at the property. For this Proposed Action only changes to the use in electrical utilities are considered.

Existing Setting – Cleveland Electric Illuminating Company is the current electrical power provider to the TR House. The current rate schedule for the TR House is a flat commercial rate. Historically, the electric usage at the TR House is approximately 96,000 kwh/yr and has an average monthly bill of \$928.

Potential Environmental Impacts and Proposed Mitigation Measures – Installing Solar Electric systems requires consideration of existing electrical utilities and their interconnection requirements. The PV system would include an automatic grid connected PV inverter that would transform the direct current generated by the solar modules into alternating current. This alternating current is fed into the system or into the public grid and synchronized with the voltage that is used there. Starting at sunrise, as soon as the solar modules generate enough power, the automatic control unit starts monitoring voltage and frequency. As soon as there is a sufficient level of irradiance, the solar inverter starts feeding energy to the grid. The control system ensures that the maximum possible power output is drawn from the solar modules at all times. This function is called Maximum Power Point Tracking (MPPT). As dusk starts and there is no longer sufficient energy available to feed power into the grid, the inverter unit shuts down the grid connection completely and stops operating. All settings and data recorded are saved. The display on the inverter is the interface between the inverter and the operator. The design of the display is geared towards simple operation and making system data available as long as the inverter operates.

The PV generating system is expected to generate approximately 12,675 kwh/yr. The electricity generated is expected to reduce the TR House electric bill from \$928 per month to approximately \$805 dollars per month. Therefore, a beneficial impact to Utilities from implementation of the Alternative 1 (Preferred Alternative) is expected.

Under the No Action Alternative a solar photovoltaic generation system would not be installed. There would be no change in the use of utilities at the TR House and therefore no impacts to Utilities would occur.

3.3.9 Regulatory Compliance

Implementation of the Proposed Action would comply with existing federal regulations and state, regional, and local policies and programs. The federal acts, executive orders, policies, and plans that apply include the following:

- **National Environmental Policy Act.** This EA was prepared in accordance with the NEPA, 42 U.S.C. §§ 4321-4370d, as implemented by the CEQ Regulations, 40 CFR Parts 1500-1508, Executive Order 11991 of 24 May 1977 directed the CEQ to issue regulations for procedural provisions of NEPA; these are binding for all federal agencies.
- **Clean Air Act and General Conformity Rule.** The CAA of 1955 and subsequent amendments specify regulations for control of the nation's air quality. Federal and state ambient air standards have been established for each criteria pollutant. The 1990 amendments to the CAA require federal facility compliance with all applicable substantive and administrative requirements for air pollution control. The CAA requires federal actions to conform to the goals of the applicable SIP. The VA has determined that the Proposed Action would not contribute to an exceedance of an ambient air quality standard, and implementation of the Proposed Action would not result in an increase in air emissions.
- **Endangered Species Act.** The ESA of 1973 and subsequent amendments provide for the protection of threatened and endangered species of fish, wildlife, and plants and their habitats. The ESA requires

federal agencies to ensure that no agency action is likely to jeopardize the continued existence of endangered or threatened species. No listed species will be affected by the Proposed Action.

- **Migratory Bird Treaty Act.** The Migratory Bird Treaty Act and Executive Order 13186 direct federal agencies to avoid or minimize negative effects on migratory birds, to protect their habitats, and to consider effects on migratory birds in NEPA documents. No migratory birds will be affected by the Proposed Action
- **National Historic Preservation Act.** Section 106 of the NHPA requires the head of any federal agency having direct or indirect jurisdiction over a proposed federal or federally-financed undertaking, prior to the expenditure of any federal funds on the undertaking, to take into account the effect of the undertaking on any historic property. No historic properties or cultural resources will be adversely affected by the Proposed Action.
- **Executive Order 12372.** Executive Order 12372, Intergovernmental Review of Federal Programs, was issued in 1982 in order to foster an intergovernmental partnership and a strengthened federalism by relying on State and local processes for the State and local government coordination and review of proposed Federal Financial assistance and direct Federal development.
- **Executive Order 12898.** Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs all federal departments and agencies to incorporate environmental justice considerations in achieving their mission. Each federal department or agency must identify and address disproportionately high and adverse human health or environmental effects of federal programs, policies, and activities on minority populations and low-income populations. The Proposed Action will not disproportionately affect minority or low-income populations
- **Executive Order 13045.** In 1997, Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, was issued. This order requires each federal agency to "...make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children and shall...ensure that its policies, programs, activities and standards address disproportionate risks to children..." The Proposed Action does not pose an environmental or safety risk to children.
- **Executive Order 13443.** Executive Order 13443, Facilitation of Hunting Heritage and Wildlife Conservation, which was signed on August 16, 2007, directed Federal agencies that have programs and activities that have a measurable effect on public land management, outdoor recreation, and wildlife management, including the Department of the Interior and the Department of Agriculture, to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.

3.4 CUMULATIVE IMPACTS AND OTHER CONSIDERATIONS

CEQ regulations stipulate that the cumulative effects analysis within an EA should consider the potential environmental impacts resulting from "the incremental impacts of the action when added to past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions" (40 CFR 1508.7). Cumulative impacts can result from "individually minor but collectively significant actions taking place over a period of time" (Section 1508.7). NEPA requires only a discussion of those cumulative impacts with the potential for significance. Potential impacts associated with these projects would be, or have been, addressed on a project-specific basis via the preparation of

NEPA documentation. The Proposed Action would have no impacts on; Aviation/Radar, Community Services/Public Health and Safety, Environmental Justice, Floodplains/Wetlands, Geology and Soils, Hydrology/Water Quality, Land Use, Resident Population, Potential for Generating Controversy, Real Property and Vegetation/Wildlife. As such, there would be no effects that contribute to cumulative impacts associated with other planned projects in the vicinity of the Proposed Action. Cumulative effects of the Proposed Action and these other projects could occur to, Aesthetics/Visual Resources, Air Quality, Cultural/Historic Resources, Economic Activity, Noise, Solid/Hazardous Waste, Transportation/Parking and Utilities. The discussion of cumulative impacts should reflect the severity of the impacts and their likelihood of occurrence, but it need not provide the same level of detail as the discussion of the environmental effects attributable to the project alone. Cumulative impacts should be addressed using standards of practicality and reasonableness. Cumulative effects can be either positive or negative. They are most likely to result when a relationship or synergism exists between the Proposed Action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping or in close proximity to the Proposed Action would be expected to have more potential for a relationship than those more geographically separated.

The VA has identified current and reasonably foreseeable actions on, or in proximity to the TR House project area. Projects within, or in proximity to, the Proposed Action area that could directly or indirectly interact with the Proposed Action are presented in Table 3-2 and define the cumulative impacts area of the Proposed Action. These actions are neither dependent on the Proposed Action addressed in this EA nor part of it. Where applicable, environmental analyses of the other actions addressed in this section have been, or would be, conducted separately, with the results of those analyses incorporated into documents prepared specifically for those actions.

Table 3-2. Cumulative Project List

Project Description	Fiscal Year
Painting	On going
Window replacement (<i>Proposed project</i>)	Start date yet to be determined
Parking lot paving (<i>Proposed project</i>)	Start date yet to be determined
Siding replacement (<i>Proposed project</i>)	Start date yet to be determined

3.4.1 Analysis of Potential Cumulative Impacts

The relevant projects projected for future funding and implementation are all construction, renovation or repair projects which could, if conducted at the same time, contribute to the cumulative impacts of the Proposed Action from short-term, construction-related activity. However, based on the implementation of BMPs and other management practices, such as scheduling construction activities to be conducted non-concurrently, the cumulative effects resulting from the Proposed Action and other foreseeable future actions will not be significant.

3.4.2 Relationship between Local Short-Term Uses of the Environment and Maintenance and Enhancement of Long-Term Biological Productivity

NEPA requires an analysis of the relationship between a project's short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one development option reduces future flexibility in pursuing other options, or that giving over a parcel of land or other resource to a certain use eliminates the possibility of other uses being performed at the site. Due to the nature of the Solar PV generation system, implementation of the Proposed Action would not result in significant impacts on sensitive environmental resources. As a result, it is not anticipated that the Proposed Action would result in any environmental impacts that would permanently narrow the range of beneficial uses of the environment, or pose long-term risks to health, safety, or the general welfare of the public.

4 SUMMARY AND CONCLUSIONS

The National Environmental Policy Act (NEPA) requires by law that the VA evaluate any effect its actions might have on the environment. Impacts to a full range of environmental issues were assessed for the No Action Alternative and each Alternative brought forward for consideration. A summary of this assessment is provided in Table 4-1.

Table 4-1. Summary of Environmental Impacts for each Alternative

Resource Area	No Action	Alt. 1 (Preferred)
Aesthetics/Visual Resources	N	N
Air Quality	N	B
Economic Activity	N	B
Cultural/Historic Resources	N	N
Noise	N	MI (T)
Solid/Hazardous Waste	N	MI (T)
Transportation/Parking	N	MI (T)
Utilities	N	B
Regulatory Compliance	N	N

Key: S = Severe, M = Moderate, MI = Minimal, N = None, B= Beneficial (T) = Temporary

There would be no significant changes in environmental conditions compared to the existing conditions that would occur as a result of the construction of an on-site Solar Photovoltaic (PV) Renewable Energy (RE) generation system. Cumulative impacts were analyzed for each of the specific resources addressed in detail. In conjunction with identified cumulative projects, no significant impacts to the human environment were identified. In addition, it was determined that resource commitments associated with the Proposed Action were not significant and that implementation of the Proposed Action would not permanently narrow the range of beneficial uses on the site.

ENVIRONMENTAL ASSESSMENT SUMMARY IMPACTS ATTRIBUTES**KEY**

S= SEVERE M= MODERATE MI= MINIMAL N= NONE B= BENIFICIAL

S M MI N B

<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	AESTHETICS
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	AIR QUALITY
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	AVIATION/RADAR
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	COMMUNITY SERVICES
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	CULTURAL RESOURCES
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	ECONOMIC ACTIVITY
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	FLOODPLAINS, WETLANDS, COASTAL ZONE, ETC.
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	GEOLOGY AND SOILS
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	HISTORIC
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	HYDROLOGY AND WATER QUALITY
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	LAND USE
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	NOISE
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	POTENTIAL FOR GENERATING SUBSTANTIAL CONTROVERSY
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	REAL PROPERTY
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	RESIDENT POPULATION
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	SOLID/HAZARDOUS WASTE
<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	TRANSPORTATION AND PARKING
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	UTILITIES
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	VEGETATION AND WILDLIFE
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	VISUAL RESOURCES
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	US ENVIRONMENTAL REGULATIONS

5 LIST OF PREPARERS

5.1 PROJECT MANAGEMENT

This EA was prepared for the Department of Veterans Affairs, which is responsible for its content.

General Dynamics Information Technology:

D.Scott Gromko, Project Principal

Anika N. McKessey, PhD, Senior Biologist, Project Manager

Jonathan J. Olson, Senior Principal Engineer

Jose Ortiz, GIS Specialist

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